UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
WELCH, DAVID T

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 June 2006*.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-17* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *02 June 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☒ All   b)☐ Some * c)☐ None of:
        1.☒ Certified copies of the priority documents have been received.
        2.☐ Certified copies of the priority documents have been received in Application No. _____.
        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date *8/13/2007*.
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1.   Claim 4 is objected to because it is not grammatically correct. Specifically, "whether to display the list image to switch whether to contain the list image in the virtual space image" is not clear, nor grammatically correct, although the Examiner can understand what was meant. Appropriate correction is required.

2.   Claims 14 and 15 are objected to because of the following informality: each structural limitation should begin with an "a" – for example, "first acquisition unit" should be amended to read --**a** first acquisition unit--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4.   Claims 1, 2 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 14, the phrase "laying out a list image to display a list of pieces of information" is unclear. The term "laying out" has a very wide variety of inferences, both physical and graphical, and it is unclear what the scope of this limitation was intended to be. An example of more clear language might be, a layout step of generating a list image comprising a list of pieces of information.

Regarding claim 2, this claim is rejected for similar reasons discussed above. Additionally, the phrase "making a plane of the list image" is also unclear.

5.   Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite

for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention. Regarding this claim, the term "divides a line segment...to t :

(1-t)" is unclear because the formula does not make sense in the scope of the claim, nor

is "t" defined in the claims.

Claim Rejections - 35 USC § 102

6.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7.   Claims 1-4, 7, 8, and 11-17 are rejected under 35 U.S.C. 102(b) as being

anticipated by Kato et al. (U.S. Patent No. 5,999,185), referred herein as Kato.

Regarding claim 1, Kato teaches an image processing method of generating an

image of a virtual space formed from a virtual object including at least one part

(abstract), characterized by comprising: a first acquisition step of acquiring a position

and orientation of a viewpoint of an observer (column 2, lines 38-50; column 17, lines 1-

2); a second acquisition step of acquiring a position and orientation of a pointing device

which is worn by the observer on a hand to execute various kinds of operations (figure

1, pointing device 3A; column 10, lines 53-55; column 17, lines 1-7); a layout step of

laying out a list image to display a list of pieces of information about the parts near the

position acquired in the second acquisition step (figure 18; figure 24; figures 24A, B, and

C; column 6, lines 50-52; column 20, lines 27-44; column 21, lines 45-47 and 53-56;

column 22, lines 62-66; column 23, lines 2-4, 18-23, 31-34, and 47-50); a virtual space

image generation step of generating the image of the virtual space after laying out the

list image, which is seen in accordance with the position and orientation of the

viewpoint; and an output step of outputting the image generated in the virtual space

image generation step to a predetermined display device (column 15, lines 58-62;

column 17, lines 11-13 and 26-28).

Regarding claim 2, Kato teaches the method according to claim 1, and further

teaches the method, characterized in that in the layout step, the list image is laid out

while making a plane of the list image, on which the pieces of information about the

parts are described, visible from the position and orientation of the viewpoint (figure 18;

figures 24A, B, and C; column 20, lines 27-44; column 23, lines 18-23).

Regarding claim 3, Kato teaches the method according to claim 1, and further

teaches the method, characterized in that in the layout step, the list image is laid out at

a position that internally divides a line segment connecting the position acquired in the

first acquisition step and the position acquired in the second acquisition step to t : (1-t)

(column 20, lines 28-32 and 47-51; column 36, lines 35-49).

Regarding claim 4, Kato teaches the method according to claim 1, and further

teaches the method, characterized by further comprising a layout control step of

controlling processing in the layout step in accordance with an instruction whether to

display the list image to switch whether to contain the list image in the virtual space

image (column 23, lines 2-5 and 9-22).

Regarding claim 7, Kato teaches the method according to claim 1, and further teaches the method, characterized by further comprising a distance calculation step of calculating a distance between the position of the pointing device and the position of the virtual object (figures 35 and 36; column 29, lines 3-17), and a list image generation step of generating the list image to display the list of pieces of information about the parts up to a layer level corresponding to the distance calculated in the distance calculation step in a hierarchical structure of the parts included in the virtual object (figure 6; figures 48A, B, and C; column 11, lines 58-67; column 12, lines 1-7; column 35, lines 23-46).

Regarding claim 8, Kato teaches the method according to claim 1, and further teaches the method, characterized in that the list image is an image to display a list of pieces of information about, of the parts included in the virtual object, a part at a position closest to the position of the pointing device acquired in the second acquisition step (column 17, lines 1-7 and 11-13; column 20, lines 27-44; column 21, lines 45-47 and 53-56; column 22, lines 62-66; column 23, lines 2-4, 18-23, 31-34, and 47-50).

Regarding claim 11, Kato teaches an image processing method of generating a virtual image corresponding to a position and orientation of an observer and compositing the virtual image with a physical image corresponding to the position and orientation of the observer, including acquiring the position and orientation of the observer, generating the virtual image in accordance with the position and orientation of the observer (column 2, lines 38-50; column 17, lines 1-2; column 28, lines 59-64), and compositing the physical image corresponding to the position and orientation of the observer with the virtual image (column 28, lines 59-64; column 29, lines 22-26),

characterized by comprising: acquiring a position of pointing means operated by the

observer; identifying a part pointed by the pointing means (figure 1, pointing device 3A;

column 10, lines 53-55; column 17, lines 1-7); generating a part information virtual

image to display information about the identified part; and determining a layout position

of the part information virtual image in accordance with the position of the pointing

means (figure 18; figure 24; figures 24A, B, and C; column 6, lines 50-52; column 20,

lines 27-44; column 21, lines 45-47 and 53-56; column 22, lines 62-66; column 23, lines

2-4, 18-23, 31-34, and 47-50).

Regarding claim 12, Kato teaches the method according to claim 11, and further

teaches the method, characterized in that the layout position is determined in

accordance with the position of the pointing means and the position and orientation of

the observer (column 17, lines 11-13; column 20, lines 27-44; column 21, lines 45-47

and 53-56; column 22, lines 62-66; column 23, lines 2-4, 18-23, 31-34, and 47-50).

Regarding claim 13, Kato teaches the method according to claim 11, and further

teaches the method, characterized in that the information about the part comprises a list

of a plurality of parts associated with the identified part (figures 24A, B, and C; column

21, lines 45-47 and 53-56; column 22, lines 62-66; column 23, lines 2-4, 18-23, 31-34,

and 47-50).

Regarding claims 14 and 15, the limitations of these claims correspond to the

limitations of claims 1 and 11, respectively; thus, they are rejected on the same grounds

as the limitations of claims 1 and 11, respectively.

Regarding claims 16 and 17, Kato teaches a program characterized by causing a

computer to execute an image processing method of claims 1 and 11 (figure 3, main

program 18; column 16, lines 50-51).

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Kato, in view of Buxton et al. (U.S. Patent No. 6,118,427), referred herein as Buxton.

Regarding claim 5, Kato teaches the method according to claim 1, but does not

teach the method, characterized by further comprising a conversion step of converting

the list image into a semitransparent image in accordance with an instruction to change

the list image to the semitransparent image. Buxton teaches a method for optimal

transparency processing in a graphical user interface to merge graphical images of

objects, comprising conversion of the images into semitransparent images in

accordance with an instruction to change the images to the semitransparent image

(column 3, lines 40-46). As was very well known to those of ordinary skill in the art, and

illustrated by Buxton, image transparency enables a user to view multiple layers of

information without losing information that would otherwise be occluded by overlapping

images, thus increasing the efficiency and simplicity of the user interaction, as well as

improving the quality of the imaging system as a whole. Therefore, it would have been

obvious to a person having ordinary skill in the art at the time the invention was made to

combine the semitransparent images of Buxton with the invention disclosed by Kato.

Regarding claim 6, Kato teaches the method according to claim 1, and further

teaches the method, characterized by further comprising a determination step of

determining on the basis of the position and orientation of the viewpoint and a position

of the virtual object whether the virtual object is present in a direction of line of sight of

the viewpoint (column 17, lines 1-7; column 40, lines 55-63). Kato does not teach the

method, further comprising a transparency control step of, when it is determined in the

determination step that the virtual object is present, making a transparency of the list

image higher than that when it is determined in the determination step that the virtual

object is not present. Buxton teaches a method for optimal transparency processing in

a graphical user interface to merge graphical images of objects, comprising a

transparency control step of, when it is determined that an object is present, making a

transparency of an image higher than that when it is determined that an object is not

present (column 3, lines 40-46; column 6, lines 58-65). As was very well known to

those of ordinary skill in the art, and illustrated by Buxton, image transparency enables

a user to view multiple layers of information without losing information that would

otherwise be occluded by overlapping images, thus increasing the efficiency and

simplicity of the user interaction, as well as improving the quality of the imaging system

as a whole. Therefore, it would have been obvious to a person having ordinary skill in

the art at the time the invention was made to combine the transparent images of Buxton

with the invention disclosed by Kato.

10.   Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Kato, in view of Stroyan (U.S. Patent No. 5,923,333), referred herein as Stroyan.

Regarding claim 9, Kato teaches the method according to claim 1, and further

teaches the method, characterized in that in the virtual space image generation step,

when the list image overlaps a hand region in the physical space image acquired in the

physical space image acquisition step (column 12, lines 18-26). Kato does not explicitly

teach the method, wherein the image of the virtual space is generated on the basis of

priority data to designate which of the hand region and the list image should be

rendered in front. Stroyan teaches a method for fast alpha transparency rendering,

wherein an image of a virtual scene is generated on the basis of priority data to

designate which of a plurality of virtual objects should be rendered in front (column 1,

lines 57-67; column 2, lines 1-5). As was well known at the time of the invention, and

illustrated by Stroyan, utilizing priority data to render objects in a virtual scene results in

an accurate representation of the virtual scene, and accomplishes this in a fast and

efficient manner. Therefore, it would have been obvious to a person having ordinary

skill in the art at the time the invention was made to combine the priority rendering

method of Stroyan with the invention disclosed by Kato.

Regarding claim 10, Kato in view of Stroyan teaches the method according to

claim 9, and further teaches the method, characterized by further comprising a

designation step of designating which of the hand region and the list image should be

rendered in front, wherein in the designation step, designated contents are set to the

priority data (Stroyan, column 1, lines 57-67; column 2, lines 1-5).

Conclusion

11.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID T. WELCH whose telephone number is (571)270-5364. The examiner can normally be reached on Monday-Thursday, and alternate Fridays, 7:30am-5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xiao Wu can be reached on (571)272-7761. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/dtw/

/XIAO M. WU/
Supervisory Patent Examiner, Art Unit 2628